

National Renewable Energy Laboratory

Alternative Fuels Division

Terrestrial Biomass Feedstock Interface
Program

External Review Panel Report

November 10, 1994

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INTRODUCTION

Background

On November 10, 1994, an external Review Panel visited the Alternative Fuels Division of the National Renewable Energy Laboratory (NREL) in Golden, Colorado, to review the Terrestrial Biomass Feedstock Interface (TBFI) Program. The Panel consisted of the following members:

Frederic J. Kuzel, Director, Great Lakes Regional Biomass Energy Program
Council of Great Lakes Governors, Chicago, Illinois

Robin L. Graham, Ph.D., Group Leader, Environmental Sciences Division
Oak Ridge National Laboratory, Oak Ridge, Tennessee

Jeff Peterson, Program Manager, Energy Resources
New York State Energy Research and Development Authority, Albany, New York

Steven Shaffer, Senior Agricultural Biologist
California Department of Food and Agriculture, Sacramento, California

Bryce J. Stokes, Ph.D., Project Leader, Southern Forest Experiment Station
U.S. Forest Service, Auburn University, Alabama

We, the Panel, recognize that the TBFI Program at NREL is important to the commercialization of biofuels and, by extension, to the overall energy program of the United States. Even as this Program needs to be supported and strengthened, the Alternative Fuels Division has made fund-allocation decisions that have cut TBFI's annual budget resources by 60%. Our review focused on the Program decisions made in light of these budget constraints—determining whether they were on- or off-target, and then providing guidance to Program managers as they steer the Program through these uncertain financial times. Thus, the purpose and scope of this half-day review were to:

- provide an independent assessment of the decisions made by TBFI Program managers.
- evaluate the Program's current direction and projected growth.
- recommend strategic directions for the Program.

The purpose of this report is to provide the TBFI Program, NREL, and the Department of Energy (DOE) a summary of the findings and recommendations of the Review Panel.

Methodology

By their very nature, review processes are governed by the amount of time available and the depth of information provided. Time constraints create a challenge for both presenters and reviewers. Within a set time frame, presenters must communicate as much information as possible, often forcing them to include only what is most important and relevant. Review Panel members must attempt to grasp where the Program is today, assess its alignment to its mission, and then endeavor to make worthwhile strategic recommendations.

To coordinate information given by the presenters with information needed by the Review Panel, the Program's managers were available throughout the meeting to answer any questions the Panel members had. This format enabled us to make educated assumptions, maintain an open dialogue, and draw informed conclusions. Nevertheless, we responded only to what we heard, saw, and read. All of the comments and recommendations contained in this report were taken from the information provided during the review meeting.

Please note that we recognize some of our recommendations may not be relevant in view of TBFI work not reported to the Review Panel. However, without information to the contrary, all of the following responses and suggestions should be worth considering.

Report Structure

The report is divided into three categories - Executive Summary, Analysis of Current Condition, and Strategic Recommendations.

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|-------------------------------|---|
| Executive Summary | • Summarizes the TBFI Program's strategic direction as noted by the Review Panel. |
| Analysis of Current Condition | • Reviews the decisions Program managers have made given current budget constraints and focuses on how these decisions will impact this program and DOE's strategic bioenergy plan. |
| Strategic Recommendations | • Presents the Panel's strategic directions for maintaining the TBFI Program. |

EXECUTIVE SUMMARY

The Terrestrial Biomass Feedstock Interface Project is a unique and vital link between the various feedstock development and conversion programs located throughout the Department of Energy. This is the only program specifically designed to coordinate the development efforts at Oak Ridge National Laboratory with the conversion efforts at the National Renewable Energy Laboratory. This link is, therefore, necessary to effectively, efficiently, and economically commercialize biofuel production in the United States. Yet another link provided by this program is to the landowner — the stakeholder responsible for providing the feedstock necessary to produce biofuels. The production of energy from biofuels, a locally produced renewable resource, will help the United States achieve energy independence while improving the local and regional economy.

The external Review Panel met on November 11, 1994, to hear presentations from TBFI personnel and to review written reports which had been provided in advance. The Panel represented a diversity of backgrounds and expertise from the public and private sectors.

The Panel's discussions and recommendations are based upon only that material which was provided to us. Based upon this information, we feel that TBFI is a good program that should be strengthened and expanded, not cut back.

ANALYSIS OF CURRENT CONDITION

Statement from the Panel

The Panel agreed that this Program is a necessary component to the commercialization of biofuels. TBFI is the vital link between feedstock suppliers and all converters. The Panel strongly encourages DOE and NREL to reconsider their funding decisions and to support this very important project.

Consequences of Budget Constraints

To present our concerns about the consequences of the financial constraints affecting the TBFI Program is the most critical part of our charge as an external Review Panel. We want to stress to AFD, NREL, and DOE how vital we believe the role of TBFI to be in linking the various aspects of the U.S. bioenergy program and maintaining communication amongst them. From the information presented, the Panel recognizes that:

- TBFI is "bare bones." If this project disappears, DOE will lose the ability to link all conversion and production processes. The Panel is concerned that the continuity of the Program will be lost because some work relevant to the project is being done elsewhere.
- delaying the composition analysis of feedstocks could negatively impact DOE's strategic bioenergy plan, specifically, the biomass power timetable and the Ethanol project's third-generation goals. Furthermore, without rapid analysis techniques, quality, timely feedstock material cannot be bred.
- shifting QA/QC from TBFI to the Ethanol project is a step backward in integrating DOE biomass programs.
- at anticipated funding levels, this project is not big enough to support interface research.

Decision-Making Review

The Terrestrial Biomass Feedstock Interface Program is entering a perilous and critical era. Though the work being done is vital, budget constraints require the Program to scale back its operations significantly. Two of the biggest challenges that the TBFI Program manager faces are:

- choosing which components of this Program are most essential to maintain while transferring or eliminating those that are not.
- continuing to serve as the information link between biomass suppliers and converters.

We noted what the TBFI Program is doing to successfully overcome these challenges as well as where we think the Program is going astray.

On-Target

The following activities and capabilities noted by the Panel constitute where the Program is on-target during this scale-back period. These are fundamental elements from which strategic directions, even at a subsistence level, can be developed.

Operational Decisions

Given budget constraints, the following Fiscal Year 1995 decisions are on-target (or were sound decisions):

- Dealing with near-term feedstock and potential site evaluation issues
- Shifting the cost of feedstock services to the users of these services
- Extending the feedstock quality and production modeling decisions
- Reducing the formal interface activities with Oak Ridge National Laboratory (informal activities are still available)
- Transferring to the project manager the work currently being conducted by a subcontractor

Planning

The Panel was extremely impressed by the establishment of a steering committee. Though in the introductory stages, this steering committee, which will be composed of people from the private as well as public sectors, will more firmly establish this Program as the link between and among the various components of a comprehensive bioenergy program.

Management

The Panel wants to recognize the work of Art Wiselogle, the TBFI Program Manager. He has done an outstanding job of establishing and directing this Program. Most notable are his:

- technical expertise.
- follow-up on the strategic recommendations from last year.
- elimination of under-performing subcontractors.
- good management strategy during budget cuts: keeping the interface part of the Program and maintaining the science at a level that can be revived. (For example, Shaine's work is related to the mission and also serves as a geographic and economic integrator.)

Off-Target

Scaling back an already lean program is difficult; determining what should stay and what can be let go, an enormous challenge. The Panel recognizes this and wants to assist the TBFI Program Manager in avoiding pitfalls during this critical time by expressing the concerns and questions that have arisen from the information presented.

Planning

Panel members expressed two primary concerns related to strategic planning for the TBFI Program, and encourage the TBFI Program to revisit and reevaluate their decisions. Also, given the size of the Program, the Panel urges NREL and DOE to restructure the planning requirements and reporting documentation so that they are commensurate with funding levels.

- The feedstocks that TBFI analyzes are inconsistent with the current priorities of the Ethanol project.
- Strategic plans should *not* be revised each year.

Funding

The Panel recognizes that Shaine's activities clearly fit with and are important to TBFI's mission. We also noted that because her funding comes from many different sources, she must report to all of them, a requirement that divides her time and undermines her direction. Is it possible to restructure her work so that she becomes a "service provider" who charges "customers" for her time and information?

STRATEGIC RECOMMENDATIONS

Overview

The TBFI Program has begun the interfacing of biofeedstock producers, biomass converters, and bioenergy consumers within NREL and throughout the entire biomass industry. This critical role should not only be allowed to continue; its scope and magnitude should be expanded! Assembling this Review Panel to provide strategic recommendations exemplifies the commitment of the TBFI Program Manager to broaden and strengthen this Program. Incorporating these recommendations should help to stabilize the Program in the short term and strengthen it in the long term.

Recommendations of the Review Panel

Securing other sources of revenue is essential to minimize the impact of short-term fluctuations in funding from DOE and NREL. The Panel recommends that the TBFI Program:

- matrix with Biomass Electric and other NREL groups. TBFI's work supports the research and development of many other programs within and outside of NREL and should be supported by them. Two examples:
 - Shaine's work should be supported by the users of her information.
 - Any research that spans across conversion technologies should be done by the TBFI Program and funded by those groups requiring the services (e.g. QA/QC, market analysis, and composition analysis).
- pursue more public/private partnerships for market assessments.
- use the steering committee as the key to strengthening the linkages between production and conversion, both public and private.

CONCLUSION

Again, the Review Panel recognizes and wishes to stress the importance of the TBFI Program and its impact on the biofuels industry. In fact, we believe that this Program is the essential interface between producers, the marketplace, and all converters throughout NREL and could become the primary linkage for the bioenergy industry.

Overall, we feel that the TBFI Program is strategically important. To date, given its small budget, it has been on-target and has produced significant results. Now, however, the Program faces substantial financial challenges. We assessed the Program's current condition, the obstacles it faces, and the strategic decisions made in light of these financial realities. We developed some strategic recommendations to help guide this Program through some of its immediate short- and long-term difficulties. We also noted where we believe the Program has strayed from its mission and scale-back goals. It is our hope that the TBFI Program will use this encouragement from an external, yet concerned, viewpoint to enhance an essential program and prepare it for survival and future growth.

The Panel recognizes again the efforts of Art Wiselogel, who is meeting and overcoming these formidable challenges; his decisions have been sound and his guidance on-target.

We wish to thank TBFI Program personnel for the opportunity to assess their Program's current status and future direction.